Trend Study 11B-11-00

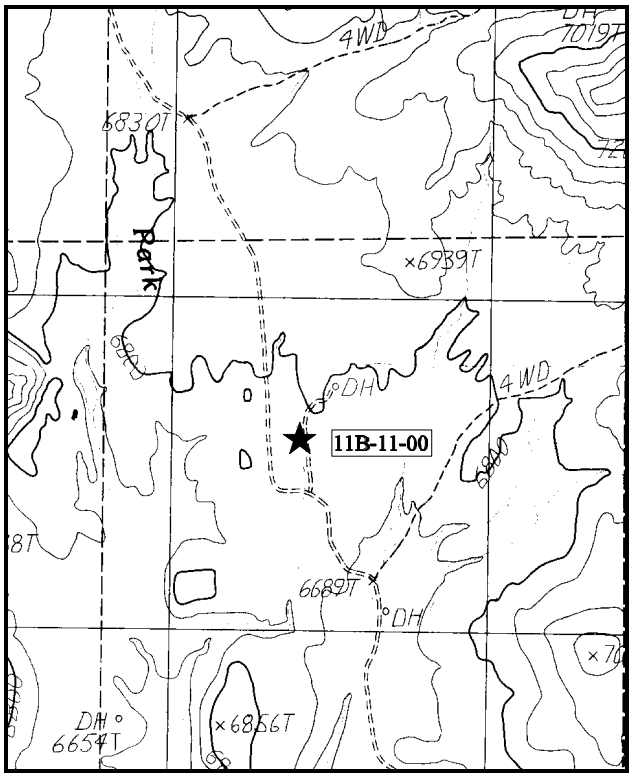
Study site name: Little Park Exclosure . Range type: Big Sagebrush-Grass .

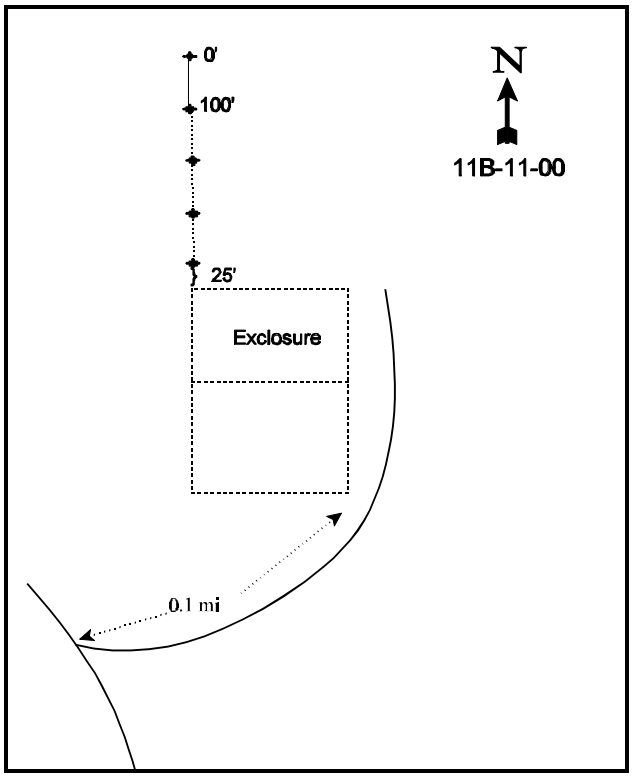
Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the intersection of U-124 ant the cutoff to Highway 6 travel up Horse Canyon 1.8 miles to a fork. Stay right and continue 8.2 miles to a fork on the left (east). Turn left and drive 0.1 miles to the northeast corner of the exclosure. Walk to the northwest corner of the exclosure to find the 400 foot stake 25 feet to the north. The other stakes, all rebar, are 100 feet apart. The stake at the 0-foot end of the baseline is marked with browse tag #7855.





Map Name: Lila Point Diagrammatic Sketch

Township 16S , Range 14E , Section 25 UTM. 4361785.313 N, 559566.032 E

DISCUSSION

Trend Study No. 11B-11 (32-15)

The Little Park Exclosure study samples the sagebrush-grass vegetation type which provides critical winter range for deer in the Little Park area. This study site is in a small sagebrush opening surrounded by pinyon and juniper, which are spreading into the flat. The site has a gentle 2-3% slope with a southern aspect and an elevation of 6,800 feet. The transect was set up near the BLM's Little Park exclosure. Deer use appears light with a nearby pellet group transect averaging only 10 deer days use/acre (24 ddu/ha) between 1984-85 and 1989-90. Between 1990-91 and 1993-94, the number of deer days use declined to an average of only 5 (11 ddu/ha). This shows the continuing downward trend for deer use in the area. A pellet group transect read parallel to the trend study site baseline in 2000, estimated only 2 deer days use/acre (5 ddu/ha). However, rabbit pellets were very abundant. There was frequent sign of cattle and horses in the vicinity in 1986, but there was no sign of cattle grazing in 2000. The area is part of the BLM Little Park grazing allotment which is used as summer and fall range.

The reddish loam soil is moderately deep and loosely compacted on the surface. Effective rooting depth is estimated at just over 13 inches with a compacted hardpan at 6 to 7 inches in depth. Percent organic matter is low at just 1.3%. Phosphorus is also limited at only 4.5 ppm, where values less than 10 ppm may limit normal plant growth and development. There are few rocks or pavement on the surface or within the profile. Although the sagebrush and grass cover appears fairly dense, nearly half of the surface is bare soil. Erosion is taking place as evidenced by three small, but fairly deep gullies, and one large gully in the area. Also, soils are pedestaled around shrubs and bunch grasses.

The dominant browse species on this site is mountain big sagebrush with an estimated density of 2,800 plants/acre in 1986 and 2,780 in 2000. Mature plants are, on average, about two feet tall. Thirty-eight percent of the plants were heavily hedged in 1986, but use was mostly light in 1994 and 2000. The population has remained stable with respect to density since 1986, and although use has declined considerably since then, percent decadency has increased (29% in 1986 to 50% in 2000). Furthermore, the proportion of plants displaying poor vigor has steadily increased (0% in 1986 to 24% in 1994 and 2000). Some of the vigor problems with sagebrush vigor appear to be partly due to competition with the abundant perennial grass understory. Grass cover has increased since 1994 from 14% to 21%. Another factor is the increasing pinyon-juniper overstory. Point-center quarter data from 2000 estimate 22 pinyon and 16 juniper trees/acre with average diameters of 2.4 and 3.4 inches respectively. However, shrub density strip data, which is more effective at estimating seedling and young tree density, estimates 240 pinyon and 100 juniper trees/acre. Very dry conditions in 2000 have obviously added to the problem with sagebrush health and vigor. Leader growth and seed production are currently (‘00) poor.

Another preferred browse, winterfat, is present in low numbers (100 to 120 plants/acre). The population consists entirely of small mature plants which receive constant use. The only other abundant shrub is the increaser broom snakeweed which has increased in density from 260 plants/acre in 1994 to 900 plants/acre in 2000.

Perennial grasses are large, vigorous, and well established. Western wheatgrass, Salina wildrye, and needle-and-thread produce the most forage. Over 50% of the total vegetative cover is provided by grasses. The low-growing, warm season blue grama grass is also fairly abundant in scattered patches. It was so dry during the summer of 2000 that blue grama did not produce seed. It appears that Salina wildrye was not identified correctly in 1994 and was lumped with western wheatgrass. Currently (‘00), Salina wildrye provides 61% of the grass cover.

Forbs are rather inconspicuous on the site, although 10 different species were encountered in 1986. Most are small and occur infrequently. The more common species, long-leaf phlox and tumblemustard, are generally considered increasers with little forage value, especially on winter range.

1986 APPARENT TREND ASSESSMENT

The vegetative trend on the site appears stable. The key browse species, mountain big sagebrush, is vigorous and recruitment is adequate. There is a good balance with herbaceous vegetation. The threat to this site comes in the form of increasing pinyon and juniper which could significantly affect the amount of quality winter browse available. Although encroachment appears rapid, it takes several decades to form a closed canopy. Considering the importance of these openings, management objectives might include some type of pinyon-juniper removal. Although prone to erosion, the soil trend currently appears stable with increased litter and vegetative cover.

1994 TREND ASSESSMENT

The trend for soils is stable to slightly improving with a decrease in percent bare ground. More importantly, the herbaceous understory provides more than 60% of the total vegetational cover which gives much better protection to the soil than that of overstory cover. Tree canopy cover cannot protect the soils effectively from high intensity summer storm events. The browse trend is slightly down. The key browse species, mountain big sagebrush, has an almost unchanged population, but percent decadency has increased substantially (29% to 49%), and plants considered in poor vigor has increased (0% to 24%). Almost one plant in three were dead in 1994. All this points to a decreasing population. The only positive statistic for sagebrush is that the biotic potential (# of seedlings) is at 8%, which is good for sagebrush. This trend is most likely caused by the extended drought as use has decreased since 1986. The trend for the herbaceous understory is up for grasses and down for forbs. Combined sum of nested frequency of grasses and forbs has remained similar.

TREND ASSESSMENT
soil - stable to slightly improving (4)
browse - slightly down (2)
herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil continues to improve. Percent cover of bare ground has declined, while vegetative and litter cover have increased. In addition, cryptogamic cover has increased dramatically from 2% in 1994 to 15% in 2000. There is still some erosion occurring as evidenced by small active gullies around the site. Trend for the key browse species, mountain big sagebrush, continues to be slightly down. Density is still fairly stable and use is mostly light. However, percent decadence continues to be high (50%) and the proportion of plants displaying poor vigor remains high at 24%. In addition, nearly half of the decadent sagebrush sampled appear to be dying (680 plants/acre) and there are currently not enough young to replace them. This decline does not appear to be the result of use. Sagebrush in the nearby exclosure appear to have similar decadency and vigor problems which are likely due to competition with grasses and trees combined with many years of drought. A return to normal precipitation patterns will do much to reverse this trend. Trend for the herbaceous understory is mixed. Sum of nested frequency and cover of perennial grasses have increased, while nested frequency of forbs has declined. Since grasses make up a majority of the herbaceous cover, the herbaceous trend is considered up slightly.

TREND ASSESSMENT
soil - up slightly (4)
browse - slightly down (2)
herbaceous understory - up slightly (4)

HERBACEOUS TRENDS --
Herd unit 11B, Study no: 11

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'94	'00	'86	'94	'00	'94	'00
G	Agropyron smithii	$_{b}$237	$_{ab}$223	$_{a}$162	83	73	60	10.46	5.23
G	Agropyron spicatum	-	-	6	-	-	2	-	.53
G	Bouteloua gracilis	$_{a}$16	$_{b}$37	$_{a}$12	6	13	6	.50	.98
G	Bromus japonicus (a)	-	-	3	-	-	1	-	.38
G	Elymus salina	$_{a}$-	$_{a}$-	$_{b}$141	-	-	52	-	12.75
G	Oryzopsis hymenoides	11	12	3	5	7	2	.23	.01
G	Poa fendleriana	$_{a}$-	$_{b}$56	$_{b}$48	-	26	19	2.58	.66
G	Poa secunda	-	-	1	-	-	1	-	.00
G	Sitanion hystrix	1	3	-	1	1	-	.03	.00
G	Stipa comata	8	4	14	6	1	7	.00	.33
Total for Annual Grasses		0	0	3	0	0	1	0	0.37
Total for Perennial Grasses		273	335	387	101	121	149	13.82	20.52
Total for Grasses		273	335	390	101	121	150	13.82	20.89
F	Astragalus convallarius	$_{b}$30	$_{b}$29	$_{a}$4	13	14	2	.65	.06
F	Cryptantha fulvocanescens	$_{b}$31	$_{b}$26	$_{a}$-	15	13	-	.48	-
F	Hedysarum boreale	2	-	-	1	-	-	-	-
F	Hymenoxys richardsonii	$_{a}$1	$_{a}$1	$_{b}$16	1	1	9	.00	.34
F	Orobanche spp.	3	-	-	1	-	-	-	-
F	Phlox hoodii	3	-	1	1	-	1	-	.00
F	Phlox longifolia	$_{c}$207	$_{b}$150	$_{a}$50	78	56	23	.73	.16
F	Schoencrambe linifolia	$_{b}$18	$_{a}$6	$_{a}$1	11	3	1	.02	.00
F	Sisymbrium altissimum (a)	-	-	8	-	-	3	-	.33
F	Sphaeralcea coccinea	$_{b}$19	$_{b}$11	$_{a}$-	11	4	-	.07	-
F	Unknown forb-perennial	1	-	-	1	-	-	-	-
Total for Annual Forbs		0	0	8	0	0	3	0	0.32
Total for Perennial Forbs		315	223	72	133	91	36	1.96	0.57
Total for Forbs		315	223	80	133	91	39	1.96	0.90

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 11B, Study no: 11

Type	Species	Strip Frequency '94	Strip Frequency '00	Average Cover % '94	Average Cover % '00
B	Artemisia tridentata vaseyana	71	73	9.33	11.33
B	Ceratoides lanata	5	5	.00	-
B	Chrysothamnus viscidiflorus viscidiflorus	0	1	-	-
B	Gutierrezia sarothrae	4	15	.31	.10
B	Juniperus osteosperma	0	5	.04	.59
B	Leptodactylon pungens	0	2	-	.38
B	Opuntia spp.	5	7	.15	.18
B	Pinus edulis	0	9	-	1.29
Total for Browse		85	117	9.84	13.89

CANOPY COVER --
Herd unit 11B, Study no: 11

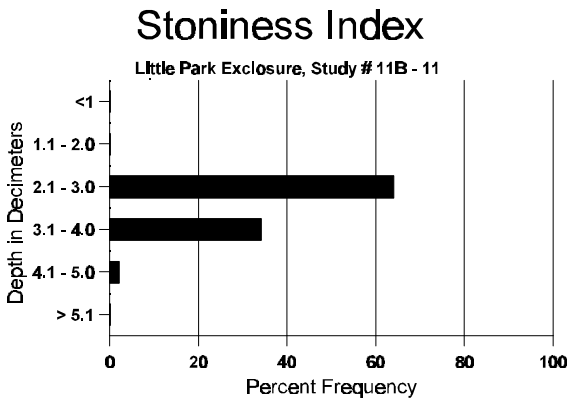
Species	Percent Cover '00
Juniperus osteosperma	.80
Pinus edulis	2

BASIC COVER --
Herd unit 11B, Study no: 11

Cover Type	Nested Frequency '94	Nested Frequency '00	Average Cover % '86	Average Cover % '94	Average Cover % '00
Vegetation	321	298	7.75	25.00	35.85
Rock	92	8	.50	1.13	.16
Pavement	82	59	.75	1.41	.75
Litter	380	353	33.00	17.77	35.97
Cryptogams	99	231	4.25	1.75	14.98
Bare Ground	350	348	53.75	47.12	41.02

SOIL ANALYSIS DATA --
Herd Unit 11B, Study # 11, Study Name: Little Park Exclosure

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.62	63.2 (12.68)	7.4	46.0	29.4	24.6	1.3	4.5	166.4	0.5



PELLET GROUP FREQUENCY --
Herd unit 11B, Study no: 11

Type	Quadrat Frequency		Pellet Transect	
	'94	'00	Pellet Groups per Acre '00	Days Use per Acre (ha) '00
Rabbit	37	46	1862	N/A
Elk	-	1	-	-
Deer	31	6	26	2 (5)
Cattle	1	-	-	-

BROWSE CHARACTERISTICS --
Herd unit 11B, Study no: 11

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	11	-	-	-	-	-	-	-	-	11	-	-	-	220			11
	00	1	-	-	2	-	-	-	-	-	3	-	-	-	60			3
Y	86	2	1	3	-	-	-	-	-	-	6	-	-	-	400			6
	94	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	00	7	-	-	4	-	-	-	-	-	11	-	-	-	220			11
M	86	11	8	5	-	-	-	-	-	-	24	-	-	-	1600	22	22	24
	94	52	14	-	-	-	-	-	-	-	66	-	-	-	1320	22	36	66
	00	44	14	1	-	-	-	-	-	-	59	-	-	-	1180	21	33	59
D	86	2	1	8	-	1	-	-	-	-	12	-	-	-	800			12
	94	39	14	17	-	-	-	-	-	-	35	-	-	35	1400			70
	00	33	27	2	5	2	-	-	-	-	35	-	-	34	1380			69
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	860			43
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	1080			54

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	26%	38%	00%	+ 2%
'94	20%	12%	24%	- 3%
'00	31%	02%	24%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	2800	Dec:		29%
'94	2860			49%
'00	2780			50%

Ceratoides lanata																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	3	-	-	1	1	-	-	-	-	5	-	-	-	100	10	9	5
	00	4	1	1	-	-	-	-	-	-	6	-	-	-	120	9	7	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	20%	00%	00%	+17%
'00	17%	17%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'86	0	Dec:	-
'94	100		-
'00	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8	18	0
	00	2	-	-	-	-	-	-	-	-	-	-	2	-	40	-	-	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	
'00	00%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'86	0		-
	'94	0		-
	'00	40		-

Gutierrezia sarothrae																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66	11	6	1
	94	10	-	-	-	-	-	-	-	-	10	-	-	-	200	7	9	10
	00	41	-	-	-	-	-	-	-	-	41	-	-	-	820	6	7	41
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	+75%
'94	00%	00%	00%	+71%
'00	00%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'86	66		0%
	'94	260		0%
	'00	900		7%

Juniperus osteosperma																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'86	0		-
	'94	0		-
	'00	100		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	10	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'94	0		-
	'00	80		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	5	-	-	-	-	-	-	-	-	5	-	-	-	100	4	16	5
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100	3	8	5
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	00	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'94	00%	00%	00%	+25%
'00	00%	00%	25%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	0%
	'94	120		17%
	'00	160		25%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	2	-	-	4	-	-	-	80			4
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120	-	-	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'94	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'94	0		-
	'00	240		-